

**Business Process Management Technology: Opportunities for
Improved Efficiency and Reduced Costs in the Mining Industry**

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Business Process Management Technology: Opportunities for Improved Efficiency and Reduced Costs in the Mining Industry

Over the past three years a new class of software known as business process management (BPM) technology has emerged that is reducing costs and improving operations in every industry sector. This paper will describe how this technology works and discuss ways that it can be used in the mining industry. As background, let's first look at the historical adoption of technology, and the problems that companies have encountered in trying to "computerize" their operations.

Technology Adoption Stages

As with most other business, the early uses of technology in the extractive industries for the most part started with the development of customized databases for accounting purposes and then later for production and inventory control. More recently, technology has been employed in developing customer relationship management (CRM) systems, sophisticated software that is designed to track the status of each contact made by a company's sales force with every prospect and customer. Success with CRM systems has not been universal, and getting data entered by salespeople is a struggle not only for the mining industry. Another problem is that, in most instances, the CRM software and the accounting software exist as stand alone silos of data that are not connected with each other. More recently, to address this problem many companies have embarked on implementing in one form or another expensive integration efforts sometimes referred to as enterprise resource planning (ERP) systems.

Enterprise Resource Planning Systems

While these investments in technology have created some improvement in operational efficiency, the goal of ERP advocates to fully integrate all key functional aspects of a mining company has remained elusive. Although the results have been disappointing, the problem with these ERP systems has not been the software itself, but rather the need to customize the software to fit the unique business processes that typically exist within each company. Companies trying to implement a one size fits all ERP system have found themselves facing the daunting task of first embarking on the task of re-engineering each of their business processes to reflect the hard-wired ERP software structure.

ERP implementations carry significant costs for an organization. The upfront license costs and the ongoing yearly maintenance costs are not inexpensive. In addition, the need to re-engineer business processes can be internally disruptive and push other needed projects further down the priority list. Implementation times are often months longer than expected. And, future modifications often require costly customization.

Is Your Investment in Technology Paying Off?

Because of these type problems, technology's return on investment has not always met expectations. The first step in turning less than satisfactory results around is to make a

candid assessment of your IT environment. Despite past experiences, worthwhile business process improvements are achievable, but senior managers would do well to ask some basic questions. For example, with respect to your CRM system, do all of your sales staff fully use the software? Can employees from every key functional area within your company access information in digital form for each of your customers and prospects? Another question is whether your technology investments have resulted in reduced costs or rather have they increased your costs? As will be discussed below, the goal of using technology to improve efficiency often fails due to the need for more than just software as the solution. Managers also need to ask whether technology has resulted in better information now than before. And, finally, whether technology has made it possible to focus more on your core business activities than before.

Why There Are Problems

One of the reasons that technology has not yet resulted in universally superior business process improvement is the great amount of information that still resides in paper form. As long as data and documents remain paper-based, the information they contain remains locked in filing cabinets or sitting on desks awaiting action that may or may not come in a timely manner. With paper-based processes, managers must work extra hard to stay on top of every transaction and every due date, rather than being able to manage by exception.

Unfortunately, most people are still more comfortable working with paper. For long documents, most people prefer to read a paper version rather than an electronic version. Having documents in a digital, web-based database, however, provides an organization with significant opportunities for cost savings in terms of improving collaboration among internal as well as external parties. Information storage and retrieval costs can also be substantially reduced. The challenge is to find ways of easily getting data and documents into digital form. The tasks of doing this is often dropped into the lap of professional staff and business unit managers whose time is better spent having others perform these clerical tasks, not to mention an aversion to performing computer based data entry tasks. A good example of this is the difficulty faced by organizations in getting sales and marketing personnel to take the time to enter information on prospects and customers in order to keep current the company's expensive CRM system. Most sales professionals take written notes while in a meeting or on a phone call with a prospect, but resist taking the time to enter this information so that it can be part of a digital database. Yet without somehow finding a way to get this information entered, the others in an organization with a need to know are left to setting up highly inefficient processes for information sharing.

Another significant problem is the way information technology has evolved. Databases that were created to store information related to one functional area within an organization such as accounting or mining production tend to stand alone as separate silos. Moving information from one functional area to another is not an easy task. The result is that when information needs to be exchanged it often requires a person from one area to communicate across departmental lines by fax, email, or phone. Information exchanged must then be keyed into the other database resulting in more inefficiency.

While all of this may not seem significant with respect to any one person or activity, when taken as a whole across all functional areas within an organization, the potential for cost savings could be huge.

Achieving Business Process Improvement

Paper is the worst enemy of achieving success with business process improvement initiatives. The first step has got to be to convert information that is now stored in paper form into a digital format. When this happens, a whole new level of process improvement becomes possible. Moving away from paper is not easy, but there are some strategies to follow that will make it somewhat easier to achieve this goal. One is to look at where the paper originates. Any forms or documents now in paper form that originate within your organization should be digitized so that paper is never used during the creation of a document. Paper generated outside of the organization is the real challenge, but not one that can't be overcome. It should be pointed out, however, that there is no downside to merely printing out a digital document to make it easier to read. The problem develops when paper documents make up a key link in a business process. There are several ways to make your organization paperless, without needing to have outside third parties adopt a paperless approach. One is to be sure that any information coming into the organization from outside be either faxed in or scanned in to a web server equipped to receive it in digital form. Any critical information would then be transcribed and validated at either a centralized back office run by the company or outsourced to a back office location operated by a third party provider.

A second step toward increased business process efficiency would be to provide document repositories and other informational databases that could be accessed with a web browser from any location with Internet access. A great deal of time is now spent searching for paper files stored in filing cabinets. Added to this is the cost for the office space needed for onsite storage or the cost for putting information in an offsite document warehouse, and the cost in terms of money and time to retrieve information.

As complex entities, organizations spend significant resources communicating internally and externally with vendors, partners, regulators, and customers. Email and the ability to attach Word and PDF documents has certainly been an improvement over sending hard copy documents by mail and fax. Email, however, is only a partial solution. Emails facilitate quick communication both internally and externally, but the information they contain still need to be filed and stored for later use. Two storage options are available. Users can create electronic files within their email program, or print out the emails and file them with the other related paper documents. Neither solution is very efficient.

A fourth issue is probably the most critical, and that is the need to automate an organization's business processes. In most companies, the flow of data and documents still involves paper and some form of manual activity. Most business processes still require people to use email, fax, or phone, and often involve the keying in of the same information more than once. The opportunities for increasing efficiency by automating

these processes are enormous, and there is now a technology solution available that can make this possible.

Business Process Management Software

Over the past three to four years a revolutionary technology has emerged to automate business processes. There are several software companies that now offer this software which has come to be known as BPM (business process management) software. They each have their own uniqueness and user interface, but what they have in common is the ability to automate almost any business process regardless of industry or functional area.

What makes this technology revolutionary is the ability to map and configure any business process without the need to write custom software code. BPM software gives the person who is automating the process a user interface with a drag and drop toolbar with all of the programming already done and working behind the scenes. What used to take weeks and months of software development time can now be done in hours. And changing a process once built and implemented is no longer a time consuming and expensive task. Most BPM software also allows for ease of importing and exporting data from other databases and legacy systems. This means that disparate databases and application systems can now “talk” to each other. As a result, the potential for business process improvement with the advent of BPM technology has never been greater.

How BPM Works

One of BPM’s strong advantages is that there is no need to re-engineer your business processes to fit the pre-set structure typically required with various enterprise resources planning systems. BPM replicates rather than replaces your current business processes. The first step in automating a business process is to use the BPM software to create an organizational chart, define the various roles in your organization, and designate individuals who fill those roles. With BPM, individuals can be reassigned and new people assigned these roles without having to redesign system. With roles defined, the next step is to use the BPM tools to map and configure the various activities that make up the business process. The BPM system allows you to organize these activities in the sequence that is normally followed.

Each step in a process usually has some activity that needs to be captured in a digital form. The BPM software has a toolbar component that can be used to design or replicate the existing paper forms associated with each activity in the process. At this point, the business rules associated with each step in the process can be specified and configured. You are now ready to deploy the process. Those users who are part of the process will receive an email notification with a hyperlink that takes the user automatically to their electronic “to do” list.

BPM systems allow administrators and managers to track and monitor the status of every transaction in a process. Some BPM systems have a built-in simulation tool that allows planners to do “what if” analysis to identify and cure potential system bottlenecks. All of

the data entered is running on a relational database, and thus can be easily retrieved for analysis purposes. Managers find that one of the important uses of a BPM system is that it makes possible the establishment and tracking of performance standards. Reporting also becomes easier since BPM systems come with a variety of reporting options including the ability to pre-schedule the automatic delivery of desired electronic reports.

Benefits of BPM

The advent of BPM has raised the potential for companies to significantly improve their operations and lower their costs of doing business. In terms of developing automated systems what used to take weeks and months to do can now be done in hours, and at a much lower cost. Modifications to existing processes can be done without the previous high cost in terms of time and resources. The greatest benefit is in the increase in productivity and the resulting reduction in staff costs to perform those tasks that have now been automated. Organizations are finding that BPM saves them money in numerous ways, from eliminating the need to re-key data numerous times to the ability to retrieve data and documents via a web browser rather than from costly to maintain and highly inefficient paper-based filing systems.

Another benefit is faster cycle times resulting not only in reduced staff costs but also in better customer service and increased satisfaction. With BPM, transaction time limits can be set so that any bottlenecks are automatically escalated to the manager responsible for the process.

BPM tools are designed so that business rules are embedded in the process. Participants in a process are required to follow these business rules in order for a given transaction to move forward. Compliance with company policies and government regulations thus becomes easier to enforce and manage. With BPM's strong reporting and tracking capabilities, managers at all levels now have a tool by which to develop performance standards and the metrics by which to measure success. The net result is better information on which to base decisions.

Business Process Outsourcing

BPM also makes possible additional cost savings by facilitating business process outsourcing. BPM technology not only provides efficiencies by removing some of the manual steps in a process, but because it is a web-based solution BPM also makes it possible for any activity in a process to be performed at whatever location offers the lowest cost alternatives. Thus, once a company has implemented a BPM solution, it then has the option of moving to the next level of cost savings by outsourcing those portions of a process that involve clerical or administrative tasks that can be performed at locations with attractive cost structures.

Key components of the process are still performed by the company. Company staff still initiate, control, and monitor those steps in a transaction that are critical, but other portions of the process can be outsourced resulting in cost savings for the company.

Potential Uses of BPM in the Mining Industry

Companies in the extractive industry could benefit in at least four areas from the use of BPM technology. BPM can help improve operations and maintenance in numerous ways. It can also help produce better collaboration and coordination between sales, production, and shipping. It can be used to automate the resource management function. A fourth example would be in BPM's ability to improve environmental, safety, and regulatory compliance systems.

Operations and Maintenance

Extractive industry companies are highly dependent on the reliability of the equipment and vehicles used for mining and transportation of their products. BPM can play a key role in determining how successful a company's O&M efforts are in maximizing the uptime of machinery and vehicles used in mining, handling, and storage. BPM can be used to automate the record keeping for each vehicle and piece of equipment, keeping track of warranties, and planned maintenance schedules. Breakdowns and unplanned repairs can be monitored and best practices established for operating each unit.

BPM can be used to quickly and efficiently set up a cost effective repository for operating manuals and engineering drawings. This would allow access to participants from any department in the company as well as outside parties who have been given permission.

Linking Sales, Production, and Shipping

For coal producers, BPM offers a relatively inexpensive solution to the problem of keeping sales and marketing personnel informed as to production schedules and output. Because the coal mining industry needs to focus on meeting customer needs for specific sulfur content, BTU levels and other specs, these organizations need to be in a position to provide their sales staff with up-to-date production information on all of these product specifications.

While marketing reps for coal companies sell to a relatively few customers, Marketing reps in other mining industries such as salt or stone may benefit from using BPM to automate the sales lead development process. BPM can be used to track and monitor the numerous contacts with prospects and customers. Unlike other contact management applications, however, BPM provides much more than just a history of the contacts that have been made with a customer.

In addition to providing the contact data base information, it also allows the sales and proposal process to be automated so that proposals are easier to prepare. The process can also be structured so as to automate the inclusion of key personnel from different departments in providing input on cost and production data as part of the proposal

development. Key managers can also be included in the contract review step. The process can also be automated to create an invoice once a sale has been completed and then feed this information into the company's general ledger.

Because of the integration features of BPM products and the ability to import and export information from almost any digital system, BPM systems can be used to link into the operating systems of third party carriers thus enabling account reps to be on top of the latest delivery information for their customers. Imagine the value of tying into your rail carrier's train or car tracking system to link your production schedule with their pick up or delivery schedule!

Resource Management

BPM can be a critical tool for managing a mining company's core assets, its real estate and mining rights. Real estate management can be automated so that deadlines for lease renewals, options, etc. don't slip by unnoticed. Related matters such as tax payments and timbering agreements can be tracked and any invoices automatically sent out per the agreements in place.

As in the case of managing O & M documents and drawings, BPM can be used to create a document management system for storing the documents associated with the acquisition and disposition of real estate. The system can also be used to enable collaboration among the numerous parties who are involved in the negotiations associated with a real estate purchase or lease agreement. A key feature of BPM is its ability to provide document version control so that the numerous internal staff and outside parties always are working on the most current document.

Environmental, Safety, and Regulatory Compliance

Compliance is an equally critical area for mining companies. The environmental permitting process is just one example of where BPM can be used to bring about business process improvement. It typically involves the collection of large amounts of data, the use of third party consultants and labs, and the preparation of huge amounts of documentation. BPM can be used to automate the document flow during the permit preparation stage, and provide a common platform for all of the entities involved in the process to collaborate.

Companies today face a wide range of compliance requirements including environmental, safety, and, in the case of public companies, the recent Sarbanes-Oxley accounting and audit standards. BPM is an extremely helpful tool to address these requirements since it provides a date and time stamp for every piece of data or document entered. And in the case of Sarbanes-Oxley, it provides the highly structured process required by that law.

Implementing a BPM Solution

It is important not to overlook the service aspects that need to be present for a successful BPM implementation. Companies should be prepared to find a solution provider who can not only deliver BPM software but also an array of related services that will result in a successful implementation. For example, full service business process solution firms such as my firm, Coriando, LLC, can help companies implement a BPM solution in several ways. An important first step is to pull together the key players in a process, develop a consensus on what the process flow should be, and then document the process. At that point, the solution provider can use the BPM tool to map and configure the process in a way that reflects what the company wants.

As discussed earlier, another major problem is the need to convert paper based data and documents into a digital form so that the maximum benefits of automating business processes can be achieved. This is a real struggle for most companies and also one of the biggest barriers to achieving greater efficiencies. Once a company's flow of paper documents has been converted into digital format, it is now possible take advantage of automating and outsourcing those clerical and administrative portions of a process that can be done at a lower cost outside the company. This becomes especially valuable when this can free up highly paid staff whose time is better spent on more productive activities, or when it solves the problem of heavy workloads associated with seasonality issues. By allowing the outsourcing of certain portions of business processes, BPM makes it possible for companies to convert fixed costs to variable.

In addition to improving mining related core functions, BPM can be used to make improvements in the other business processes in such functional areas as purchasing, human resources, legal, and accounting. One of the most valuable aspects of BPM is that it can be implemented on an incremental basis. An organization can begin with automating just one process and then move forward one process at a time rather than embarking on an enterprise wide deployment.

In the final analysis, however, possibly BPM's most important contribution is its ability to provide management with better and more up-to-date information. Bottlenecks get identified before they become major problems. Anything that can be quantified and measured can be set up as part of a performance report and delivered automatically to decision-makers on a set schedule. The trend toward business process automation is very much still in its early stages. In a year when fuel costs have soared and raw materials like roof bolts have tripled in price, great opportunities still remain for mining companies to achieve new levels of business process productivity in the years ahead.

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